5. UNUSUAL BREEDING SITE OF NIGHT HERON *NYCTICORAX NYCTICORAX* (LINN.)

The night heron *Nycticorax nycticorax* invariably prefers densely foliaged trees for roosting as well as nesting. At Keoladeo National Park, Bharatpur, the night herons normally nest in a dense cluster of babul (*Acacia nilotica*) trees near Malar gate. Only in stray cases does a nest or two of the night heron occur with the nests of white ibis *Theskiornis aethiopica* and herons in the main, comparatively open, heronry on babul trees.

In 1986, I found a very unusual heronry, purely of night herons, in the backwaters of the Chambal approximately 10 km upstream of Jawahar Sagar dam and barely 500 m from Kota-Rawatbhata road, 41 km south of Kota (25°06'N, 75°43'E). Here night herons bred in the open, without any camouflage or cover at all, on dry stumps of trees. What once used to be a thickly vegetated valley before the construction of this dam in the late 1960s, is now a vast stretch of water with remnants of trees jutting out here and there as dead and decaying stumps. It is on some of these stumps that night herons have been making their nests for the last 10-12 years. Nests consisted of, as usual, dry twigs placed in the form of a crude saucer-like platform, approximately 50 cm wide, supported in forks of the stumps 1 to 4 m above water.

During 1986 I had observed 42 nests, whereas in 1987 there were only 25 nests (no observations were made in 1988 and 1989). I am not sure whether the irregular and much lower rainfall of 1987 was the cause of reduction in the number of nests.

The nest building activity started in August. During October 1986, I had seen nestlings from 2-3 to 10-15 days old. Some chicks had started climbing up the dry branches of the stumps, while others had started jumping on the nest and testing their wings. However, a few nests still had 1-3 blue-green eggs. I also saw four chicks in a nest. By the end of November, most of the fledgelings were flying about and very few adults were seen.

In general there were one or two nests on each stump, but a few had even four. Some stumps had no nests on them though they had forked branches. Distance between two adjoining stumps having nests varied from 10 to 50 m. The closest nest from the bank was at least 75 m away. All the nests were clearly visible to a bird of prey flying in that area. I had seen a pair of the Indian great horned owl *Bubo bubo*, a Bonelli's eagle *Hieraaetus fasciatus*, an osprey *Pandion haliaetus and a couple of pariah kites Milvus migrans* in the area, but did not see a bird of prey attacking any nest.

February 20, 1990 R.G. SONI

6. OBSERVATIONS ON A BREEDING COLONY OF PAINTED STORK *MYCTERIA LEUCOCEPHALA* (PENNANT) IN ANANTAPUR DISTRICT, ANDHRA PRADESH

Japanese Encephalities (JE) virus activity was reported in Karnataka as early as 1951 (Kerr and Gatne 1954, Smithburn *et al.* 1954). During a widespread epidemic in 1955, which covered parts of Andhra Pradesh, Tamil Nadu, Pondicherry and Karnataka, two cases of JE were recorded from Kolar district. In 1958, four cases of encephalitis occurred at Chintamani in the same district. A major outbreak was again reported in 1977, followed by frequent outbreaks of varying intensity in Kolar and Mandya district (Bhat 1984, Prasad *et al.* 1982, George *et al.* 1987).

Wading birds (Ciconiformes) play a role in the maintenance-transmission cycle of JE virus in nature (Rodrigues *et al.* 1981). A study to collect baseline information on the incidence and breeding activity of these birds was therefore commenced during 1980 as a part of the general investigations on the ecology of the virus. The main objective of the study was to correlate the migratory and breeding activity of the birds with epidemic outbreaks of the disease.

As a consequence of preliminary enquiry we received information from Dr. E.V. Shankarappa of Anantapur, Andhra Pradesh, in December 1982, that a large colony of a species of waders bred regularly every year at Veerapura village, Hindpur taluka, Anantapur district, 12 km from Bagepalli on the border of Kolar district. The village was visited on 15 May 1983.

We found a couple of hundred empty nests

distributed on half a dozen trees within the village limits. The villagers informed us that the birds nested and bred during the dry months of 1982, from January to June and departed, and they did not come back during 1983, perhaps because the tanks had dried up due to drought. The species breeding in the village was identified by the villagers as the painted stork *Mycteria leucocephala*, from pictures of various birds that we showed them.

The village was again visited on 6 March 1984, 4 July 1986 and 2 February 1987 and it was learnt that the birds did not resume breeding. The villagers told us that the birds arrived in small numbers during January, lingered on for a few days, foraged in nearby tanks which were almost empty and departed. On 2 February 1987 we ourselves observed 35-40 birds in nearby Venkatapura tank.

After a five year gap, the painted storks resumed their breeding activity at Veerapura in 1988. According to the villagers, the birds arrived during the last week of January and started building nests. The colony was visited by us on 9 February, 1 and 25 March, 14 April, 6 May and 10 June Nest building activity and incubation of eggs by some birds was observed on 9 February, 1 and 25 March and 14 April. Hatchlings were noted on 25 March and 14 April; fledgelings on 25 March, 14 April, 6 May and 10 June; and juvenile birds on 14 April, 6 May and 10 June. There were 155 nests on nine trees. The majority had two fledgelings each and a few had one or three fledgelings each. The total number of birds present in the mid-breeding season was estimated at 620.

Amidst the nest of painted storks, grey herons *Ardea cinerea* built two nests on one of the trees. The birds were incubating their eggs on 9 February. One of the nests had hatchlings on 1 March. Both of them had fledgelings on 25 March and juveniles on 25 March and 14 April. In two nests there were only three nestlings.

Painted storks returned for breeding in 1989. We visited the village on 2 February, 2 March, 10 March, 6 April, 19 May and 5 July. The villagers informed us that the birds emigrated during June/July 1988 and returned for breeding during the second week of January. On 2 February, they had already constructed 156 nests and laid eggs in 114 nests. On 2 March there were 307 nests, 100 under construction, 200 under incubation and 7 with fledgelings. On 10 March the number of nests had increased to 334, 100 of them had fledgelings, 10 had juveniles and rest under incubation. On 19 May the number of nests remained the same, 200 nests had young ones, 100 were empty and the remaining had fledgelings. On 5 July, 274 nests were empty and the remaining had juvenile birds still waiting for the food. There were in all 150 juveniles in and around the nests and 10 adults when visited.

The 334 nests built by the birds were distributed on 10 trees within the village boundary and the periphery. The species of trees and the number of nests on each tree are shown in Table 1. During the peak breeding activity the majority of nests had two fledgelings and a few had one or three. The total number of birds including young ones was estimated to be 1336.

TABLE 1

DETAILS OF PAINTED STORK NESTS AT VEERAPURA DURING 1989

Tree species	No. of nests
1. *Ficus religiosa* Linn. (pipal)	87
2. *Ficus religiosa*	26
3. *Tamarindus indicus* Linn. (tamarind)	21
4. *Ficus religiosa*	50
5. *Ficus religiosa*	76
6. *Prosopis chilensis* DC	12
7. *Ficus religiosa*	5
8. *Ficus religiosa*	34
9. *Tamarindus indicus*	22
10. *Tamarindus indicus*	1
Total	334

The villagers stated that the birds had been breeding in the village continuously for about 30 years until 1982. During 1982, there was a disturbance due to heavy lopping of trees, poaching of eggs and predation of eggs by monkeys. Perhaps the disturbance had scared the birds away and prevented the breeding during the intervening period from 1983 to 1987.

Some of the older villagers reported that before commencing to breed at Veerapura, more than three decades ago, the birds were breeding at Venkatapura village, about a kilometre away from Veerapura, from times immemorial.

Both during 1988 and 1989, at the end of the breeding seasons the nearby irrigation tanks were empty and the birds were flying away several kilometres for foraging.

Painted storks are known to have a strong fidelity to their breeding sites. In almost all the places the birds consistently arrive more or less at a particular time of the year, year after year, reconstruct the old nests or build new nests, lay the eggs, incubate them, rear the

young and emigrate to the foraging areas. However, the breeding seasons vary from place to place. Hume (1890) stated that the bird breeds immediately at the close of the monsoon, in October in upper India, and February in parts of southern India. Baker (1929) stated that the species breeds from September to January in large colonies and nearly always in company with numerous other storks, herons and cormorants, etc. Baker and Inglis (1930), quoting Hume, stated that these birds breed in February in parts of southern India. Ali (1953), Kahl (1970) and Breeden (1982) observed the breeding of these birds during August/September, July/August and June/July respectively at Keoladeo Ghana Sanctuary, Bharatpur, Rajasthan.

Ali and Ripley (1987) stated that the breeding species depended upon the monsoon conditions — August to October in north India, November to March in the south and March to April in Sri Lanka. However, recent observations at different places in peninsular India showed a lot of variation in the periodicity of breeding, often independent of monsoon conditions.

The breeding at Kokkare Bellur, Mandya district, Karnataka (Neginhal 1977, Saxena 1980, Nagulu and Ramana Rao 1983), and at Edurupattu, Andhra Pradesh (Nagulu and Ramana Rao 1983) commences during the dry seasons in January/February. But at Telineerapuram, Srikakulam district, Andhra Pradesh; Kundakulam and Moondraidappu, Tirunelveli district, Tamil Nadu, the breeding commences during October/November (Suresh Kumar 1980, Nagulu and Ramana Rao 1983), just at the commencement of north-east monsoon. Obviously the breeding season in northern India, coastal Andhra Pradesh and Tamil Nadu coincides with the monsoon season. However, at Kokkare Bellur, Edurupattu and Veerapura, the breeding occurs during the dry months of the year.

H.R. BHAT
P. GEORGE JACOB
January 9, 1990 A.V. JAMGAONKAR

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